

Exhibit O

Start-Ups Seek to Help Users Put a Price on Their Personal Data

By Joshua Brustein

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Facebook's pending initial public offering gives credence to the argument that personal data is the oil of the digital age. The company was built on a formula common to the technology industry: offer people a service, collect information about them as they use that service and use that information to sell advertising.

People have been willing to give away their data while the companies make money. But there is some momentum for the idea that personal data could function as a kind of online currency, to be cashed in directly or exchanged for other items of value. A number of start-ups allow people to take control — and perhaps profit from — the digital trails that they leave on the Internet.

"That marketplace does not exist right now, because consumers are not in on the game," said Shane Green, who founded a company called Personal in 2009.

The idea behind Mr. Green's company involves two steps. First, his team created a series of personal data vaults, which contain thousands of data points about its users (the company calls them owners). This data can be as prosaic as birth dates, or as specific as someone's preference for spicy foods. People control what information they share and remove data they don't want to share at any time.

The problem is that companies don't need to pay for the information when they get it free.

"The killer app isn't here yet," said William Hoffman, who is working on a multiyear study of the economics of personal data for the World Economic Forum. But with increased consumer awareness of the value of that information — Facebook could be worth as much as \$100 billion — that may soon change. "I'm willing to bet that within the next 12 months something big will catch on," he said.



Shane Green, standing, founded Personal, a company that helps people control their personal data on the Internet, using what is known as a data locker. Daniel Rosenbaum for The New York Times

The concept of treating data like currency has long excited certain computer programmers and academics. But to almost everyone else, it is boring. Personal data management has none of the obvious appeal of social networks or smartphones. But concerns about privacy may be changing that, Mr. Hoffman said.

Many of the new ideas center on a concept known as the personal data locker. People keep a single account with information about themselves. Businesses would pay for this data because it allows them to offer personalized products and advertising. And because people retain control over the data in their lockers, they can demand something of value in return. Maybe a discounted vacation, or a cash payment.

Proponents of personal data lockers do not see them simply as a solution to privacy concerns. Rather, they hope that people will share even more data if there is a market for them to benefit from it.

The first step seems to be establishing trust. Reputation.com monitors the Internet for potentially harmful information and tries to remove it, while the Locker Project looks to create a single place where users can find what they see and do online. On Connect.me, which is in a private testing period, users vouch for one another, confirming that, for instance, someone is indeed a basketball player or a bookworm in an attempt to create a credible online reputation.

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- Ever considered a password manager? You should.
- There are also many ways to brush away the tracks you leave on the internet.

To popularize the concept of the data locker, Personal wants to create a market for exchanging access to data. Mr. Green says users will reap either cash or other benefits, like heavy discounts on certain products. In January the White House announced that it would work with Personal and several other companies to allow students to download their academic data from federal databases and store it in a data locker. Personal says it is also working on partnerships with businesses.

A challenge for the company will be whether it can offer enough money to persuade people to use the system. Consumer information is worth billions in aggregate, but individually, the bits of data are worth practically nothing. A study by JPMorgan Chase last year showed that a unique user was worth \$4 to Facebook and \$24 to Google. Others looked at Facebook's recent filings with the Securities and Exchange Commission and placed the value of a user as high as \$120.

The data that people store in their locker can be as prosaic as birth dates, or as specific as a preference for spicy foods.

Singly, a similar service that is still in a testing period, feels that developers can create better personalized services for people if all of the personal data can be accessed from a single location. With a person's permission, Singly draws data about them from around the Web, and allows them to share it with developers.

Jason Cavnar, a founder of Singly, is skeptical that personal data will be exchanged in the straightforward transactions that other data locker companies propose. While people may be willing to share their lists of Facebook friends, the bar is set higher for, say, the specifics of their financial history. Developers can build dozens of apps based on what one's friends on social media like to eat, but they are not churning out nearly so many that rely on, say, private financial data.

Instead, he says people will create data lockers and share their contents because they will receive compelling services by doing so. This idea has already been successful with Mint.com, which has shown that people will share confidential financial information in exchange for money-management advice.

People will not share information without a level of trust, and that is what the personal data management companies are trying to sell. The final barrier is that people may find creating detailed databases about themselves too onerous to justify the potential rewards. In order to create a real market for data, enough people need to see an immediate, tangible benefit in filling up their lockers, said Mr. Green of Personal.

He said he took note of this while presenting his product to groups of potential users. They nodded along with him as he told them about privacy and control. But when he showed his audience how entering their data into Personal allowed them to fill out online forms with a single click, something snapped for them.

"I don't think we quite realized how much of an emotional vein that tapped into," he said, "It's not easy to make data sexy or fun. It's not sharing photos with your friends on Facebook."